

Libraries Love Lakes Educational Activities Lesson Plans & Resources



If your host library has a dedicated group of higher-elementary level patrons and longer program times it may be possible to hold a more in-depth lesson on lake science which integrates library resource exercises with basic ecological principles. These activities would also be appropriate for interested school libraries.

Following are two full lesson plans appropriate for 3rd-5th graders as well as list of other resources for finding lesson plans.

Activity: Learn your Lake Critters!

Intended Age Group: 3rd-5th Grade

Summary: Students will identify lakes near them and identify some key differences between lake ecosystems and river/stream/marsh ecosystems. Students will then work together to identify animals they've seen around lakes before. Finally, students will be assigned their own lake organisms to research using available resources and then answer questions relevant to those organisms: (Prerequisite knowledge required: Food chain, native habitat)

Goals: At the end of this activity, students will be able to:

- Knowledge-based
 - o Identify key differences between lake ecosystems and other freshwater systems
 - o Explain the natural habitat, life cycle, and placement within the food chain of a lake-dwelling organism.
 - o Discuss the importance of keeping our freshwater systems clean.
- Skill-based
 - o Use online and library resources to search for relevant information about an assigned organism.

Materials:

- Resources with information about assigned animal ready either in physical form or online.

Lesson Plan:

- 1) Start by asking students to identify lakes/freshwater systems which they have been to. (They should all be able to say Mill River, some may say Lake Mohegan, Candlewood Lake, etc.).
- 2) Ask students to identify some key differences between rivers and lakes/ marshes and lakes, etc. Discuss.

- a. Key lake features: slow water movement, enclosed by land, deeper than rivers and marshes (usually)
- 3) Explain that since a lake ecosystem is so different from river/marsh ecosystems, they will have some different organisms living in the water, though the organisms living *around* the lake may be the same.
- 4) Assign each student with a local organism that lives in or around the lake. Have students spend time on their online/book resources answering the following questions?
 - a. What is the name of your organism?
 - b. What type of organism is it? (Mammal, Amphibian, Bird, Phytoplankton, Zooplankton, Fish, Plant)
 - c. Where does your organism live on the lake?
 - d. Where does your organism get energy? (Where is your organism on the food chain)?
 - e. Is this organism endangered?
- 5) After the student have spent 20 minutes on their research, regroup for discussion. Ask how many people had each type of organism. Go over in the order of the food chain (starting with phytoplankton, then zooplankton, etc).
- 6) Talk about endangered species, explain threats to animals in freshwater systems.
- 7) If time allows, end by reading a book on the animal in/around the lake.

Activity: Keeping Freshwater Clean

Intended Age Groups: 3rd-5th grade

Summary: Students will review the importance of freshwater sources and the relative scarcity of useable freshwater in our global ecosystem. Students will then review various threats to the health of freshwater systems, and lakes especially. These threats include pollution, runoff, invasive species and climate change.

Goals: At the end of this activity, students will be able to:

- *Knowledge-building*
 - Recognize the scarcity of usable freshwater in the world
 - Recognize the importance of freshwater systems and name several ecosystem services which lakes and clean freshwater provide.
 - Gain a deeper understanding of threats to the health and cleanliness of freshwater ecosystems and lakes.
- *Skill-building*
 - Read a scientific report about threats to healthy freshwater ecosystems and identify key points given within the paper.
 - Identify the source of the information presented to them.

Materials:

- 1 L of water and three cups for saltwater, captured freshwater, and drinkable freshwater.

- Handouts on threats to a healthy freshwater ecosystem (to be compiled from online sources/ books)

Lesson Plan:

- 1) Start by asking students to identify lakes/freshwater systems which they have been to.
- 2) Going off the first part, have them list the uses of freshwater, both out in lakes and in our every day lives.
 - a. Drinking
 - b. Cleaning
 - c. Swimming
 - d. Gardening
 - e. Enjoying the Lake (Recreation Potential)
- 3) Start with the freshwater activity (adapted from [Michigan Sea Grant Lesson Plans](#)). This activity is meant to encourage students to reflect on the scarcity of useable freshwater in the world.
 - a. Start with 1 L of water in a soda bottle. This represents all the water in the world.
 - b. Ask students to guess how much of this water is salt water.
 - i. Remove 97.5% (975 mL, pre-marked on the bottle)
 - c. Explain that the remaining water is all the freshwater in the world. Explain that not all of that water is useable.
 - i. Remove 15 mL to represent polar ice caps, groundwater
 - d. Remaining 10 mL represents all the freshwater that we can use.
- 4) Emphasize the importance of keeping these freshwater systems clean. Tell students the rest of the time will be spent finding out some threat to the health and cleanliness of freshwater. Split into three/four groups.
- 5) Assign each group a topic. Potential topics include Pollution, Nutrient Runoff, Climate Change, and invasive species. Each student will get a handout on their threat. They should read individually and work together to answer the following questions:
 - a. Where did the information on your hand-out come from?
 - b. What is the threat (basic definition)?
 - c. What are some specific examples/effects of your threat?
 - d. What can we do to help?
- 6) Regroup and discuss the importance of helping where we can. Talk about ways to help they identified/ other ways to be involved.

Additional Resources for Choosing a Lesson Plan

[**Great Lakes in My World-Unit 1**](#) (Alliance for the Great Lakes): This curriculum packet includes 17 Great Lakes-focused activities and lesson plans for K-8 students, most of which could be easily adapted for any lake system and modified to fit any time or resource constraints.

[Water Lesson Plans \(Penn State College of Agricultural Sciences\)](#): This is a list of lesson plans for K-12 cultivated by Penn State University. Lesson plans cover everything from basic water chemistry to watershed function and ecosystem services.

[Build-Your-Own-Watershed Activity \(Michigan Sea Grant\)](#): Here the Michigan Sea Grant outlines a longer activity which allows participants to understand how land and water are connected.